DOCUMENT RESUME

ED 075 490 TM 002 569

TITLE	Massachusetts Application of National Assessment Items in Citizenship and Science.
INSTITUTION	Massachusetts State Dept. of Education, Boston.
PUB DATE	Feb 72
NOTE	6p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Citizenship; *Criterion Referenced Tests; *Grade 7; Measurement Techniques; *National Competency Tests; *Objective Tests; Rating Scales; Science Tests; State Programs; *Testing Programs
IDENTIFIERS	*Massachusetts

ABSTRACT

The 1972 assessment activities in the Massachusetts schools concentrated on the areas of citizenship and science, utilizing two seventh grade samples of 10,000 students each, with each group completing only one assessment form. The testing program utilized National Assessment Items for age 13, as well as a few items from the Measurement Research Center to replace items not released by National Assessment for the objective being measured. The following procedures were carried out: (1) two four-page pamphlets, one for Citizenship and one for Science, were prepared listing the objectives used by National Assessment in these curricula area; (2) a rating scale to indicate priority of objectives was prepared and sent to each of the 57 schools used in the sample population; rating categories applied by each school to each objective were: (a) objective with highest priority; (b) objective of importance requiring extensive evaluation; (c) objective important, but not requiring extensive evaluation; (d) objective not of importance; omission will have no effect; and (e) objective not applicable to this school system. Objective results of the assessment were not available for inclusion. Attachment A to the report provides samples of the Citizenship and Science Objectives, and Attachment B is a summary of the ratings of all Science Objectives and identifies the number of items to be used in measuring each objective. (DB)

ED 075490

TM 002 569

February, 1972

MASSACHUSETTS APPLICATION OF NATIONAL ASSESSMENT ITEMS IN CITIZENSHIP AND SCIENCE

U.S. DEPARTMENT OF HEALTH EDUCATION & WELFARE OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

Introduction

Massachusetts, a newcomer to state planned testing and evaluation activities, is operating under an assessment design or plan based upon the following hierarchall classification of testing conditions:

1. Administration of tests to large groups for normative interpretation
2. Interpretation of achievement in light of aptitude or ability
3. Testing for mastery or criterion reference testing
4. Individualized tracking and evaluation of pupil achievement

As the Commonwealth sets out to move ultimately toward a highly individualized testing philosophy, minimizing as much as possible over interpretation of comparative or normative statistics, it has skipped stage Number 1 above, moved last year through a demonstration of achievement-aptitude comparisons, and is now demonstrating classification Number 3, mastery testing.

Testing during the 1970-71 school year involved administration of the California Test of Academic Aptitude and the Comprehensive Test of Basic Skills to 90,000 fourth grade pupils. All data reports emanating from the Division of Research and Development related achievement ("obtained") scores to aptitude ("anticipated") scores. Stanine scales for all subtests and total scores based on the "difference" scores provided an opportunity for both individual school and school system interpretation.

Philosophy underlying current experimentation

Because of the recognition of differences in pupil populations, differences in curricula content, and differences in educational philosophies among school systems in Massachusetts, selection of school test content by the State Department of Education for administration to all schools was open to serious question. Questions have been raised regarding the audacity of the Department to select for administration last year to all schools even a test of the basic skills.

Recognizing the above condition, the following policies were adopted by the Department's Task Force planning the current year's assessment activities:

1. Measurement would relate to the content areas of citizenship and science and would reflect levels of mastery implying criterion reference rather than norm reference testing.

2. Performance would be reported in terms of individual item mastery omitting total scores.

3. Teachers in the schools participating in the sample populations would have a voice in deciding objectives to be measured.

Sampling procedures

Two mutually exclusive samples were randomly selected for the seventh grade testing, so that no group of students would be asked to complete more than one assessment form. Schools were grouped according to the size of their seventh grade enrollment. Each group was designated as a stratum and five strata were identified. From each of the five strata, representing small to large enrollments, a proportional number of schools was randomly selected. Each ten percent sample was composed of fifty-seven schools representing about 10,600 pupils.

Ordering Objectives

The availability of National Assessment objectives in citizenship and science and the potential availability of items measuring these objectives, thankfully discouraged Masssachusetts from reinventing the wheel -- a characteristic of education in the 70's. This is not to imply that the wheel does not need retreading, but the prepared objectives of National Assessment at least moved the Commonwealth away from the starting gate and into the first turn.

More specifically, and with the assistance of Westinghouse Learning and NRC, its subsidiary, the following procedures were carried out.

1. Two four page pamphlets, one for Citizenship and one for Science were prepared listing the objectives used by National Assessment in these curricula areas of citizenship and science. (See Attachment "A").

2. A rating scale to indicate priority of objectives was prepared and sent to each school used in the population of 10,000 in each seventh grade sample.

   Rating categories applied by each school to each objective are abbreviated below:

   (1) Objective with highest priority.
   (2) Objective of importance requiring extensive evaluation.
   (3) Objective important, but not requiring extensive evaluation.
   (4) Objective not of importance; omission will have no effect.
   (5) Objective not applicable to this school system.

Presented below is an illustration of the ranking or reordering of two objectives in the area of Citizenship. Items ranked 1 were given a priority value of 3; items ranked 2 were given a priority value of 2; items ranked 3 were given a priority value of 1; items ranked 4 were given a priority value of -1; and items ranked 5 were given a priority value of -2.

A. Help maintain law and order by understanding the need for law and order.

1 = 73	x 3 =	219
2 = 44	x 2 =	88
3 = 15	x 1 =	15
4 = 2	x-1 =	-2
5 = 3	x-2 =	-6
Omits = 0		314

B. Help maintain law and order by being conscious of right and wrong behavior; encourage ethical and lawful behavor in others.

1 = 61	x 3 =	183
2 = 51	x 2 =	102
3 = 22	x 1 =	22
4 = 1	x-1 =	-1
5 = 2	x-2 =	-4
Omits = 0		302

Items A and B above indicate a high priority having a total rating value of 314 and 302 respectively. Ranking of items ranged from a low of 54 for the objective "Help maintain law and order by protesting unjust rules openly" to item A above having a value of 314.

Planning the Tests

Since the 7th grade was the level chosen for the sample, National Assessment items for age 13 were applicable to this group. In certain instances, however, National Assessment had not released items pertaining to a selected objective. It was necessary, therefore, for Measurement Research Center to select from its own files or develop a few items having construct validity for the objective being measured.

Attachment B presents a summary of the ratings of all Science Objectives and identifies the number of items to be used measuring each objective. A suggested cut-off point for the cumulative rating was decided at a level of 112. Cumulative ratings below this point reflected objectives not included in the test.

It can be recognized that the above process attempted to obtain input at the local level assuring a higher degree of curricular validity than could be expected from the administration of any already published Citizenship and Science tests.

Analysis of Results

At the time of presentation of this paper, it was not possible to present objective results. A report indicating level of mastery in terms of each item and objective will be prepared for each school district. Also provided will be an item and objectives summary or analysis indicating mastery data for the total statewide sample in both Citizenship and Science tests.

Limitations of the Study

As a result of progress to date, certain limitations are already noted and future limitations or considerations will be expected. Three of these are identified in the following paragraphs:

1. Citizenship items appear to be more subjective than Science items. This may be reflected in the higher priority ratings given Citizenship items as compared to Science. Strong objections to some of the objectives were forthcoming from teachers.

2. Some teachers requested receipt of the items for acceptance or rejection rather than the objectives. These requests were not granted as there was a feeling that there would be direct teaching of the item rather than the objective. The concern merits further study however.

3. Because of the acceptance of a great number of objectives, relatively few items appeared in each test with reference to the objective limiting conclusions regarding mastery.

Further Study

An attempt will be made to ascertain the reaction of teachers, administrators, and in certain instances, School Board personnel, regarding both the measurement technique and the mastery levels of pupils. The effect of the testing on curriculum development will be noted during the coming academic year.

Attachment "A"

Illustrations of the Citizenship Objectives appear below:

III. HELP MAINTAIN LAW AND ORDER

____A. Understand the need for law and order.

____B. Are conscious of right and wrong behavior; encourage ethical and lawful behavior in others.

____C. Comply with public law and school rules.

____D. Help authorities in specific cases.

____E. Protest unjust rules openly.

____F. Inform themselves about the law.

Each of the above objectives were reacted to at a priority rating consistent with the priority definitions.

Illustrations as follows are samples of the Science Objectives:

II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE

____A. Ability to identify and define a scientific problem. (This includes recognizing and defining the problem present in a given situation, and isolating the problem from extraneous material.)

____B. Ability to suggest or recognize a scientific hypothesis. (This includes synthesizing data pertinent to a problem, and recognizing the possibility of testing a hypothesis.)

____C. Ability to propose or select validating procedures. (This includes planning or recognizing an adequate plan for the collection of data, making logical predictions, and designing apparatus set-ups.)

____E. Ability to interpret data; i.e., to comprehend the meaning of data and to recognize, formulate, and evaluate conclusions and generalizations on the basis of information known or given.

It is important in considering the illustrations above to place major emphasis on the process involved without too detailed an evaluation of the definitiveness of the objective statements.

Attachment "B"

Summary ratings of Science objectives with suggested number of items.

Objective	Rating	Number of Exercises and Time
IV E	262	3 items - 2½ min.
IV D	248	2 items - 2½ min.
II A	246	2 items - 3½ min.
III A	236	3 items - 3½ min.
IV C	226	1 item - 1 min.
I H	208	3 items - 3 min.
III F	202	2 items - 2 min.
II E	201	2 items - 2 min.
I J	198	3 items - 3 min.
II G-2	198	2 items - 3 min.
III E	176	2 items - 1½ min.
I K	171	2 items - 3 min.
II B	167	2 items - 3 min.
III B	163	2 items - 2 min.
II H	156	2 items - 3 min.
II J	149	1 item - 1½ min.
II G-1	147	2 items - 3 min.
II D	143	0 items (cannot assess)
IV A	134	1 item - 2½ min.
IV B	130	2 items - 2 min.
II F	126	1 item - 1½ min.
I P	112	2 items - 1½ min.
II I	105	0 items
II C	94	0 items
I L	88	0 items
III C	87	0 items
I O	82	0 items
I H	76	0 items
I E	74	0 items
III D	74	0 items
I G	59	0 items
I H	54	0 items
I D	53	0 items
I I	50	0 items
I B	23	0 items
I F	1	0 items
I A	-58	0 items
I C	-117	0 items